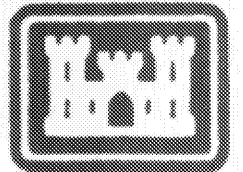


FACILITIES IMPROVEMENT FEASIBILITY STUDY

Regulatory Branch U.S. Army Corps of Engineers

Waltham, Massachusetts



THE WINTHROP GROUP

ARCHITECTS ENGINEERS PLANNERS

NEW LONDON, CONNECTICUT

Project Review

William Lawless

Chief

Regulatory Branch

Joan Drake

Senior Project Manager

Regulatory Branch

Submitted: August 1990

The Winthrop Group

Project Team

Charles J. Nafie Jr. AIA

Patrick J. Walsh

Anne Buehrig Townsend

Michael C. Rice, P.E.

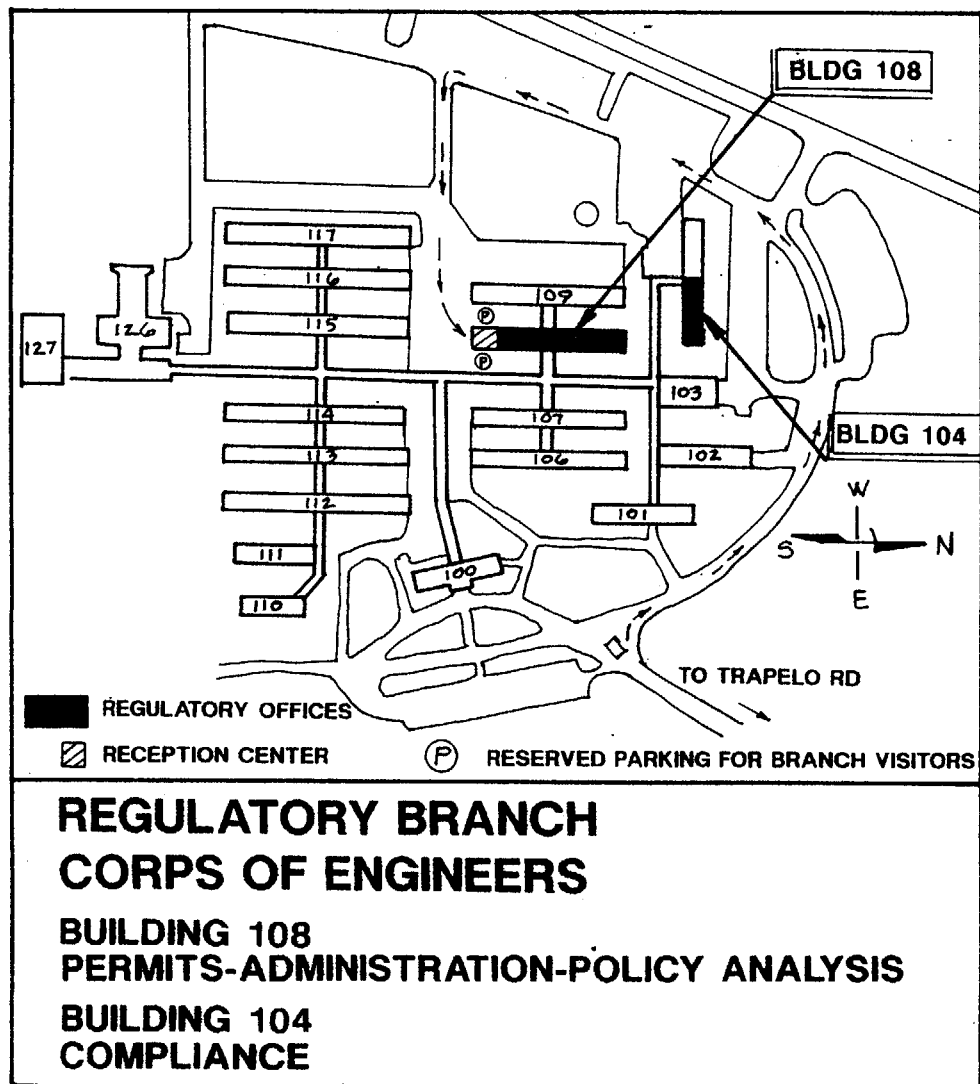


TABLE OF CONTENTS

	<u>Page</u>
BACKGROUND/HISTORY	2
REGULATORY BRANCH DESCRIPTION	2
STATEMENT OF NEED	3
CODE ANALYSIS	4
BUILDING DOCUMENTATION & ANALYSIS OF EXISTING CONDITIONS	4
SCHEME A	11
SCHEME B	17
SCHEME C	23
SCHEME D	29
CONCLUSIONS	35
MATRIX DIAGRAMS AND COST ESTIMATE	37

BACKGROUND/ HISTORY

During the summer of 1989 the Regulatory Branch of the Army Corps of Engineers solicited the services of The Winthrop Group, Architectural/Engineering/Planning firm, to conduct a feasibility study of space needs assessment and building evaluation for the Regulatory Branch's existing facilities. In October, 1989, The Winthrop Group's design team was contracted to begin the study.

The Regulatory Branch of the Army Corps of Engineers is currently housed in Building 108 and a portion of Building 104, in the Waltham Federal Center, Waltham, Massachusetts. The buildings were built in 1944 as part of the Murphy Army Hospital. Eventually the General Services Administration took control of the complex and presently manages and operates the facility.

Buildings 108 and 104 are part of a larger building complex comprised of one-and two-story brick clad buildings. The complex is connected by a series of corridors that allows staff to circulate throughout the building complex.

The Regulatory Branch is located near the rear of the complex and appears to be easily accessible and includes a sufficient number of visitor parking spaces.

The Regulatory Branch currently occupies 10,800 square feet in the two buildings.

REGULATORY BRANCH

Description

The Regulatory Branch of the New England Division, U.S. Army Corps of Engineers is headquartered in Waltham, Massachusetts. (Satellite offices in Augusta, Maine, and Essex Junction, Vermont, are not part of this study). The Regulatory Branch processes permits for activities in water and wetlands in the states of Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and Maine.

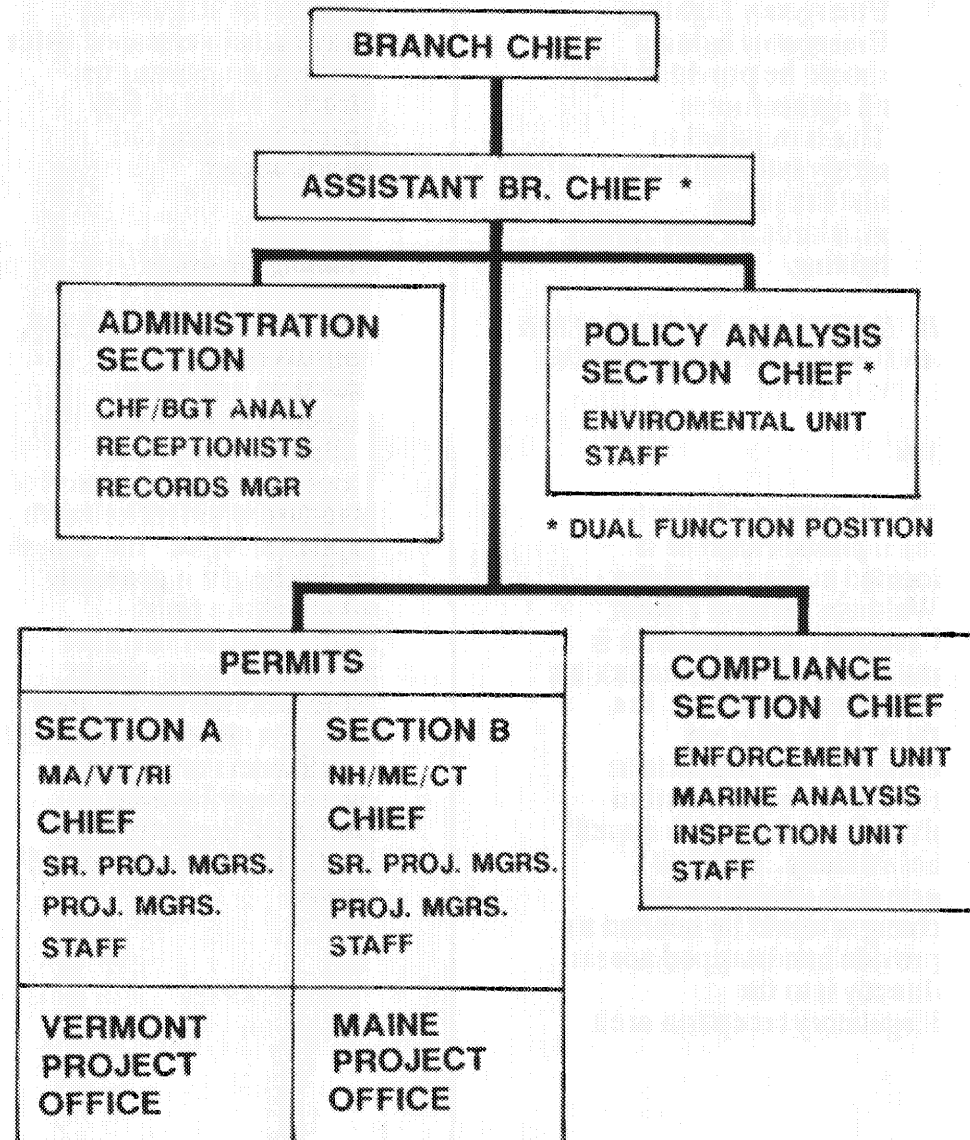
Currently, the Regulatory Branch headquarters has a staff size of 72 and is growing. The branch is divided into several sections: Administration, Policy Analysis, Compliance, and two (2) Permits (Sections A and B).

The following chart represents the organizational structure of the Regulatory Branch and area requirements:



Exterior - Building 108

REGULATORY BRANCH ORGANIZATION



STATEMENT OF NEED

The purposes of the Feasibility Study are:

- identify agencies or entities with approval authority
- determine their requirements
- approval process and coordination needs
- planning, design, and implementation of facility improvements.

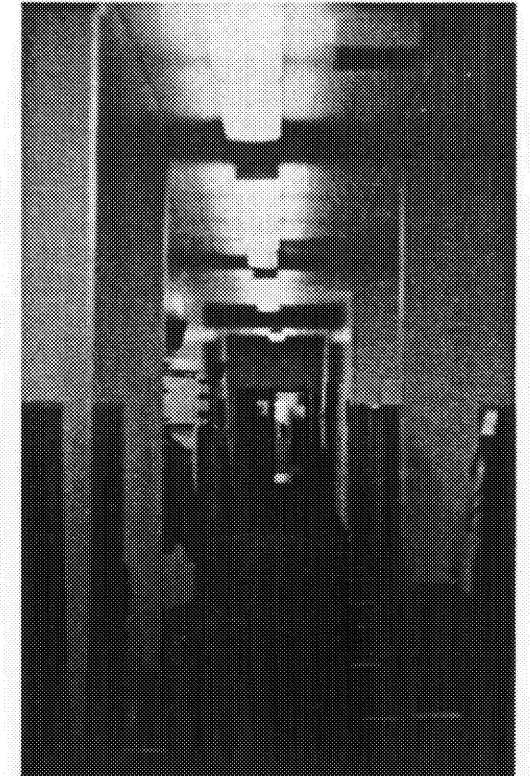
Areas analyzed and recommendations for improvements:

- code analysis
- site design
- space allocation and layout
- architectural
- structural
- mechanical
- electrical
- interior finishes
- furniture and equipment systems
- public access

The design team developed alternative interior designs within the shells of the existing buildings.

Alternative design plans will present improved utility functions, space allocation, interior design, workflow; and accessibilty to the public.

The overall study should develop efficient, creative solutions that are capable of implementation within the requirements of the federal process.



Egress - Corridor

BUILDING CODE ANALYSIS

The Building Officials and Code Administrators (BOCA), National Fire Protection Administration (NFPA), and State and Local Code requirements are not mandatory for General Services Administration (GSA) buildings. However, compliance with these codes is highly desirable. Buildings 104 and 108 were reviewed with respect to the mechanical and electrical codes normally used for building construction. A status list was developed:

1. Heating - The existing system is adequate and meets code requirements.
2. Plumbing - The number of fixtures is adequate for the present number of employees. The BOCA Plumbing Code requires that one water closet (toilet) be provided for every 25 people. The approximate population in the two buildings is 25 in Building 104 and 50 in Building 108.

Although existing toilet rooms in Buildings 108 and 104 do not conform to building code handicapped requirements, there are handicapped toilet rooms accessible by connected corridors to the two buildings. Hot water, required for each lavatory, is not available in either building and must be provided.

3. Electrical Wiring - Existing circuits should be tested to ensure that all receptacles are properly grounded. There is adequate electrical power available for office lighting, receptacle and computer loads. However, the existing circuits must be rewired.
4. Fire Alarms - Smoke detectors, manual pull stations, and alarm horns should be installed and connected to the existing facility system.

These are required to satisfy life safety standards for fire alarm systems.

5. Emergency Lighting - Emergency lighting should be provided for all egress routes. This is required to satisfy building code and life safety standards for emergency lighting.

BUILDING DOCUMENTATION AND ANALYSIS OF EXISTING CONDITIONS

Site

The Regulatory Branch's main public entrance is located at the rear of the Waltham Federal Center Complex. This entrance is not designed to accommodate handicapped visitors, but there is an adjacent entrance that connects to the main corridor system that allows for handicapped accessibility. Because extensive construction changes would be needed to provide handicapped access directly into the Regulatory reception area,

it is recommended to continue to utilize the adjacent existing handicapped entrance.

Next to the Regulatory Branch main entrance there is adequate parking for visitors; a total of five spaces including one handicapped.

Building Structure

The complex, built in 1944, consists mainly of one-story and some two-story wood frame buildings clad in brick. Roof system is composed of standard wood rafters with asphalt shingles. Interior ceiling height is generally 10'-0" above finish floor. Exterior windows are double hung, single pane windows for the most part. Permanent window air conditioners minimize natural ventilation. Buildings' floor structure is wood frame with a crawl space.

Interior Finishes

The interior of the Regulatory Branch is comprised of painted sheetrock walls. Flooring is a combination of carpet and vinyl tile. The ceiling is painted sheetrock with some acoustic tile suspended ceilings.

There has been a modicum of upgrading of interior finishes over the years and generally little coordination of color and decor for design continuity. Existing furniture and equipment are of many different grades and conditions. (See Furniture Analysis, Pg. 6). If a new furniture system were introduced, most existing furniture and equipment could be eliminated.

MECHANICAL SYSTEMS

Heating, Ventilation, and Air Conditioning (HVAC)

The present HVAC system in Buildings 104 and 108 is unsatisfactory. Principal tenant complaint is too much heat. Existing heating system includes

steam main piping from the central plant, distribution piping to the buildings with Pressure Reducing Valves (PRV) and room steam radiators. Steam supply is very reliable, with a main line pressure of approximately 23 pounds per square inch, gage (psig). Steam pressure is reduced by the PRV to between 1.5 and 2.0 psig and is fed to the building radiators. The PRV's are located in the subfloor steam chase. A single PRV provides steam to multiple radiators. The amount of steam is determined by the pressure setting of the PRV. There are no local thermostats for individual control of temperature in each room. During mild weather, steam flow to the radiators must be reduced by manually resetting the PRV's, otherwise the rooms overheat. The present practice of constantly resetting the PRV's is time consuming and is inadequate to respond to tenant requirements. Ventilation air for occupied rooms is provided by operable windows installed throughout both buildings. To cope with summer heat load and the warmth of the radiators, window mounted

air conditioners have been installed throughout both buildings. These window units are in fair condition.

Plumbing

Building 104 has a large toilet room (three water closets and three lavatories) and a small toilet room (one water closet and one lavatory). Building 108 has two toilet rooms. The mens' toilet room has two urinals, a water closet, and two lavatories. The womens' toilet room has two water closets and a lavatory. Fixtures in these rooms are adequate. Toilet rooms are not designed for physically handicapped persons. System static water pressure is 85 psig and is adequate. Hot water is not available in either building. The BOCA plumbing code requires that the lavatories have hot water.

Fire Protection

Main corridors that connect Buildings 108 and 104 to the rest of the facility are sprinklered. Buildings 104 and 108 are not sprinklered. Presently

there are no BOCA nor GSA code requirements for sprinklers in these two buildings and no changes are planned.

ELECTRICAL SYSTEMS

Power

Buildings are supplied with receptacle circuits that have been rewired repeatedly during a period of over thirty years. Some of the circuits were installed in 1983. Tenants have experienced problems with the older ungrounded circuits and electrical shocks have been reported. Newer, quadruplex receptacles are intended for the staff personal computers. Some of the older receptacles are used for task lighting and air conditioners. The tenant mini-computer has a backup battery power supply. Power supply to the buildings is 208V/120V, three-phase. Conversations with GSA staff indicate that the power distribution system is at capacity and no new electrical loads should be added.

Computers have overloaded the circuits on occasion. Conversations with personnel indicate that four computers - or more - are often plugged into the same circuit. The maximum number of units on a circuit should be limited to three computers - with no other hook-ups; example, coffee machines. Based upon the number of computers, some of the existing circuit breakers in the distribution panel should be dedicated for computers only and marked with different colors. An electrician would provide separate wiring and conduit from the color-coded receptacles back to the distribution panel.

Lighting

Offices are lighted with a combination of fluorescent surface, pendant, and task lighting. In some offices, high shelves, stacks, and partition walls interfere with the light from ceiling mounted fixtures and cause shadows. Required emergency lighting is not installed in egress corridors in Buildings 108 and 104.

Fire Alarms

The facility's coded central alarm system is maintained and tested periodically. Heat detectors are installed in the offices. However, these appear to have been painted over and the operability of the detectors is questionable. Based upon conversations with GSA staff, it does not appear that the detectors in Buildings 108 and 104 are connected to the central system.

FURNITURE ANALYSIS

On site documentation of existing furniture condition was conducted and items were categorized by function and condition in relation to physical space restraints. Three categories were established based upon future use, condition, and function as proposed in Schemes A and B. This inventory was classified as:

- A - Good
- B - Possible use
- C - Potential discard

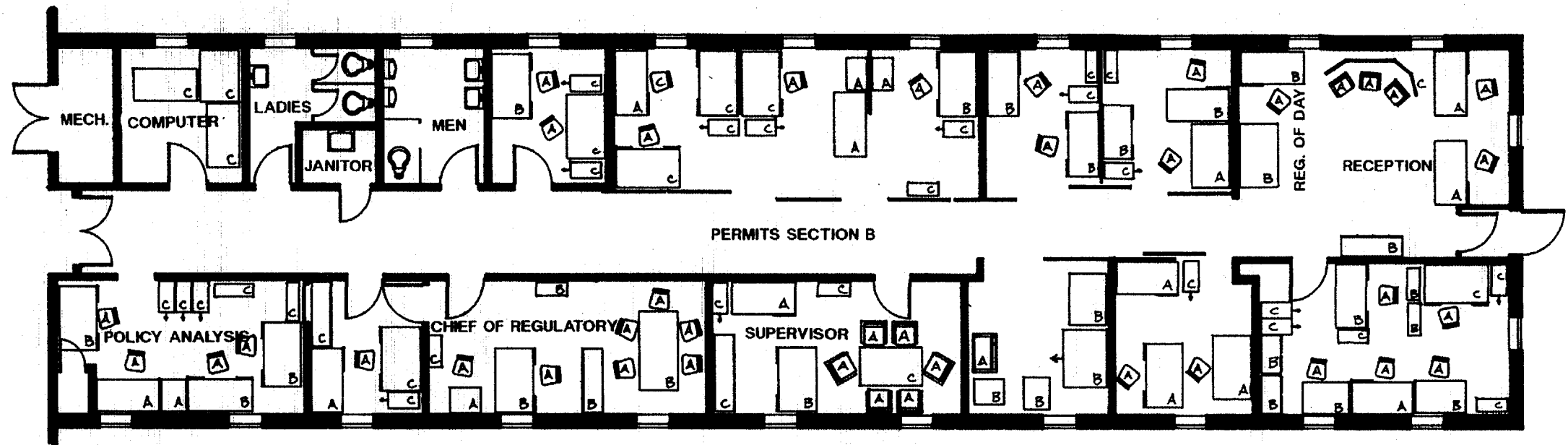
The intent of this classification is to rate existing furniture and equipment so as to determine compatibility of reuse in some schemes.

Because of limited space in each building wing, Schemes A and B propose to utilize most of the existing furniture. When compared with a standard modular office system, the existing furniture and equipment are very inefficient and requires additional floor space. This will disallow staff increase. If either Scheme A or B were developed, a thorough housecleaning of bulky inefficient furniture should be undertaken.

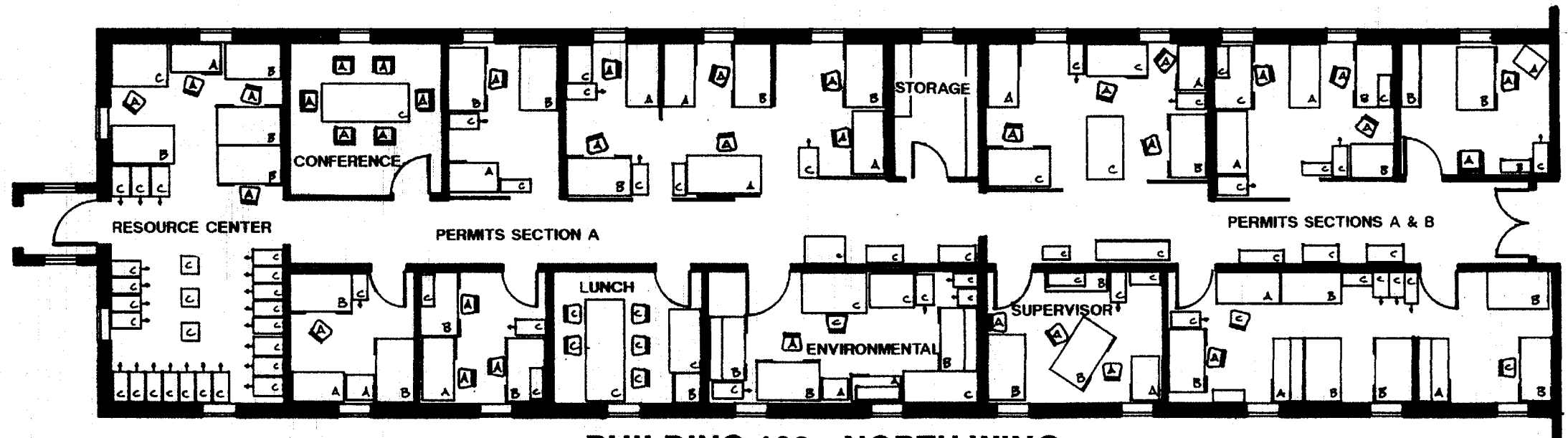


Offices

Existing Conditions

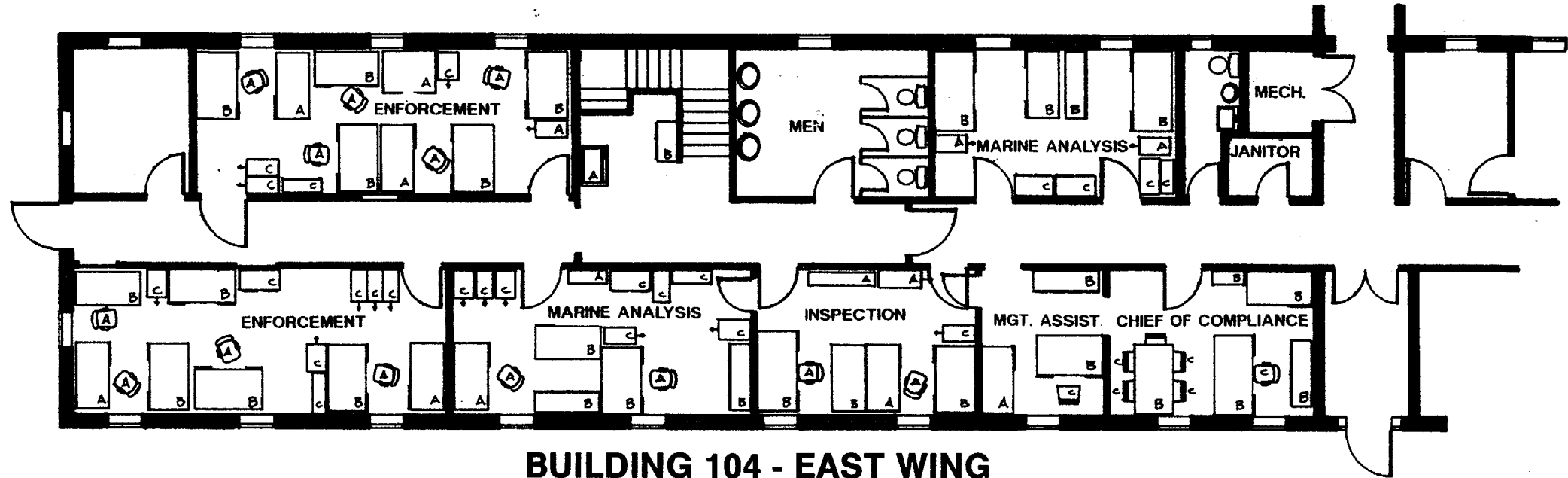


BUILDING 108 - SOUTH WING



BUILDING 108 - NORTH WING

EXISTING CONDITIONS



BUILDING 104 - EAST WING

FURNITURE LEGEND

- A - GOOD
- B - POSSIBLE USE
- C - POTENTIAL DISCARD

PROGRAM AREA EXISTING CONDITIONS

	EXISTING S.F.
ADMINISTRATION	1525
POLICY ANALYSIS	530
PERMITS-A	1351
PERMITS-B	1218
COMPLIANCE	1543

EXISTING CONDITIONS

Reception Area



*Similar interior view in all
schemes of reception*

Scheme A

SCHEME A

GENERAL

Scheme A proposes to minimize renovation of Buildings 108 and 104 by modifying the public area in 108 only. The remainder of the Regulatory Branch areas would be rearranged to satisfy programmatic functions and anticipates reuse of existing furniture and equipment. This scheme will not meet future space needs of the Regulatory Branch because increased space will be designated to the public reception area. Continued use of the existing, bulky furniture and equipment would necessitate smaller work areas and disallow staff increase.

SPECIFIC

The main entrance to the Regulatory Branch would undergo complete renovation by eliminating all existing partitions in the front half of 108 South. The new public area will include the following modifications:

- Reception Lobby
- Large Conference Room
- Resource Center
- Lunch/Conference

When a permanent location for the space saving stacks is determined structural reinforcement of the floor will be required.

The environmental group would be located directly adjacent to Policy Analysis and Permits (Section B) will move to 108 North.

All floors and walls would be refinished and new carpeting installed. In 108 North a new lunchroom and conference area would be constructed to free up the middle of the wing for work areas.

Building 104 will only have minimal code deficiencies corrected.

MECHANICAL

Heating, Ventilation, and Air Conditioning

In Scheme A, the existing steam supply piping and radiator are reused. However, a temperature control will be added to each radiator so that tenants will have a more comfortable room temperature.

This will be accomplished with a direct action valve that automatically adjusts the steam pressure to the radiator based upon the room air temperature.

Estimated cooling load for Building 108 is 25 tons (300,000 BTUH). Estimated cooling load for Building 104 is 12 tons (144,000 BTUH). The present number of window units is not adequate for the hottest summer days. Additional window units if purchased, would be an estimated installed cost of \$1,200/unit. The number of new units depends on the present condition of the existing units plus the additional units to handle the maximum cooling load. Assuming that 18 units were purchased, the first cost would be approximately \$21,600. The energy efficiency ratio (EER) of window units is usually between 7.0 and 8.0 btuh/watt. This means that the total energy cost to air condition both buildings for a typical cooling season would be \$9,900 @ \$.10/kwh. Expected life of a window unit is ten years with proper maintenance.

Plumbing

Existing toilet rooms will be reused. Existing system is minimally adequate and no changes are proposed. Note: there is no hot water; a basic code necessity. Instant hot water heaters should be installed in each bathroom.

ELECTRICAL

Fire Alarms

Existing heat detectors should not be reused. Smoke detectors should be installed and connected to a local alarm unit to provide fire detection. A manual pull station should be installed at each exit and, upon activation, signal the central coded alarm system.

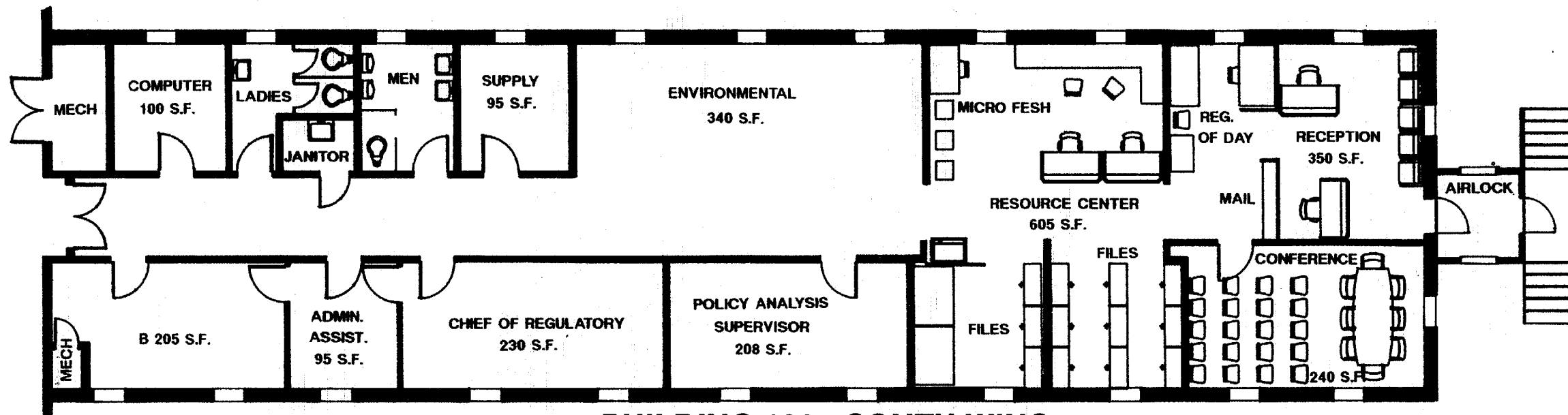
Receptacles

A safety hazard exists due to the ungrounded outlets. An electrician should test all circuits and de-energize the old, unsafe receptacles. As the old circuits are removed, new replacement circuits should be added. New outlets should be installed in the form of quad boxes with a load of 3 VA per outlet to service the personal computers. These boxes should be installed in the partition walls to minimize hazard due to tripping. In addition to the wall receptacles, floor receptacles may be used where desks are located away from the walls. The wiring can be installed in the crawl spaces that exist below the buildings.

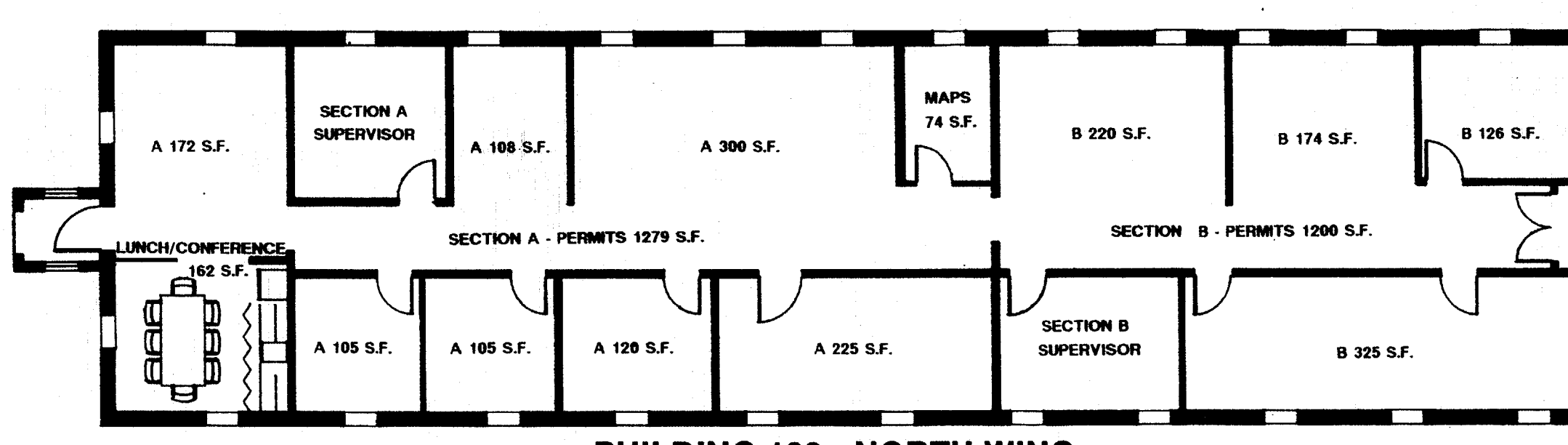
Lighting

Task lighting may be used at desks to compensate for poor light levels in existing rooms. Fluorescent lighting fixtures with electronic ballasts may be used in Building 108. In the reception, resource, conference, and lunchroom, a lighting level of 50 foot candles should be installed. In a typical office, the energy savings from these fixtures should result in less than a five-year payback period. As existing lights are replaced with energy saving lights, electricity saved may be used to power additional computers or other office equipment without increasing the overall electricity demand.

Emergency lighting is required by the BOCA building code and must be installed in egress corridors of Buildings 108 and 104.

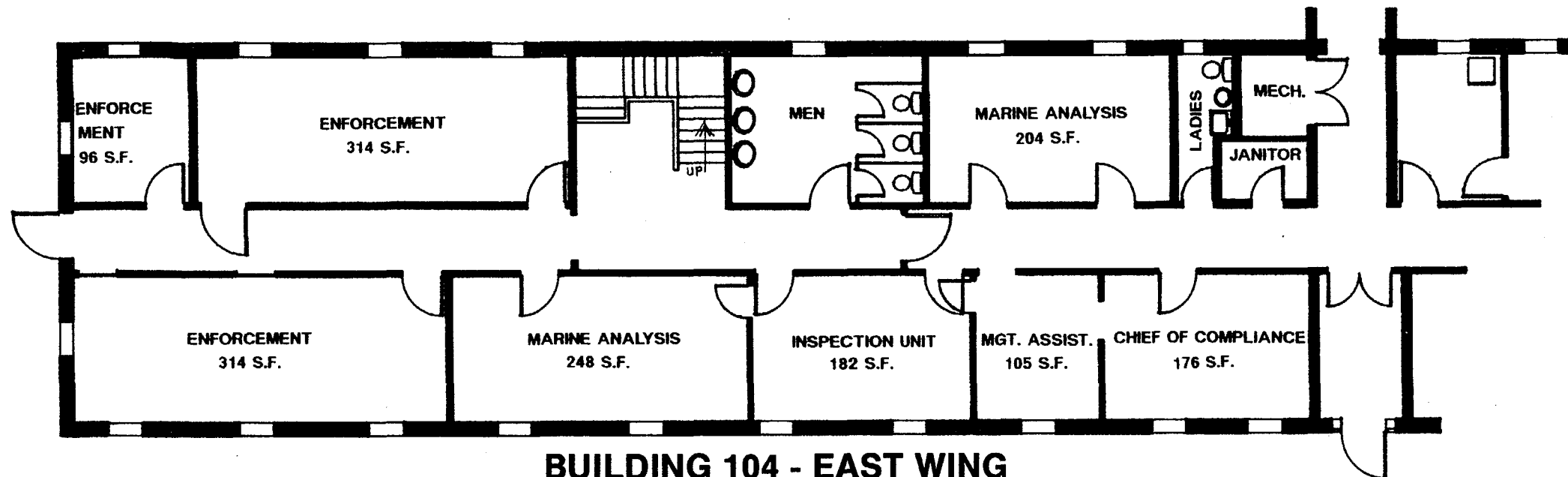


BUILDING 108 - SOUTH WING



BUILDING 108 - NORTH WING

SCHEME A



BUILDING 104 - EAST WING

COST ESTIMATE SCHEME "A"

ENTRY VESTIBULE	\$ 13,665
DEMOLITION	4,500
BUILDING PARTITIONS	0
INTERIOR FINISHES	35,169
FURNITURE & EQUIPMENT	29,068
PLUMBING SYSTEMS	1,400
MECHANICAL & HVAC SYSTEMS	32,700
ELECTRICAL SYSTEMS	<u>22,484</u>
TOTAL	\$138,986

PROGRAM AREA SCHEME "A"

	EXISTING S.F.	PROPOSED S.F.	CHANGE
ADMINISTRATION	1525	1689	+164
POLICY ANALYSIS	530	648	+118
PERMITS-A	1351	1279	- 72
PERMITS-B	1218	1200	- 18
COMPLIANCE	<u>1543</u>	<u>1639</u>	<u>+ 96</u>
TOTALS	6167	6455	+288

SCHEME A

Scheme B

SCHEME B

GENERAL

Scheme B renovates all of 108 South and removes some of the walls in 108 North and Building 104. This design provides all of the Administration and Policy Analysis combined with reception to be completely renovated, leaving Permits (Sections A and B), to be located together in 108 North. Compliance in Building 104 will have minor changes in the floor layout.

In this scheme existing walls are removed, but by retaining existing, bulky furniture and equipment there is no potential to increase staff and provide efficient office and work environments.

SPECIFIC

In Building 108 the main public entrance will be modified to accommodate reception, conference, and the resource center. Policy Analysis and Administration will also be relocated. The existing toilet rooms will remain. A small area of Permits is incorporated into 108 South.

In 108 North, Permits (Sections A and B) are combined. All existing walls are removed and a small conference and lunchroom are located at the end of the building.

The Compliance Section in Building 104 will undergo minimal renovation by painting ceiling and walls. New flooring and new window treatments will be incorporated in needed areas. Toilet room renovation will decrease the mens' room square footage allowing some increase in area for the Compliance Section.

Existing furniture and equipment will be reused in 108 North and Building 104, except for Supervisors' in Permits.

MECHANICAL

Heating, Ventilation, and Air Conditioning

In Scheme B, the existing steam supply piping and radiator are reused. However, a temperature control will be added to each radiator so that tenants will have a more comfortable room temperature. This will be accomplished with a direct action valve that automatically adjusts the steam pressure to the radiator based upon the room air temperature. Estimated cooling load for Building 108 is 25 tons (300,000 BTUH). Estimated cooling load for Building 104 is 12 tons (144,000 BTUH). The present number of window units is not adequate for the hottest summer days. Additional window units if purchased, would be an estimated installed cost of \$1,200/unit.

The number of new units depends on the present condition of the existing units plus the additional units to handle the maximum cooling load. Assuming that 18 units were purchased, the first cost would be approximately \$21,600. The energy efficiency ratio (EER) of window units is usually between 7.0 and 8.0 btuh/watt. This means that the total energy cost to air condition both buildings for a typical cooling season would be \$9,900 @ \$.10/kwh. Expected life of a window unit is ten years with proper maintenance.

Plumbing

Renovate Building 108 toilet rooms with new fixtures as shown in drawings, (pg. 20, 21). Building 104 toilet rooms to be renovated to allow increase in work space.

ELECTRICAL

Fire Alarms

Existing heat detectors should not be reused. Smoke detectors should be installed and connected to a local alarm unit to provide fire detection. A manual pull station should be installed at each exit and, upon activation, signal the central coded alarm system.

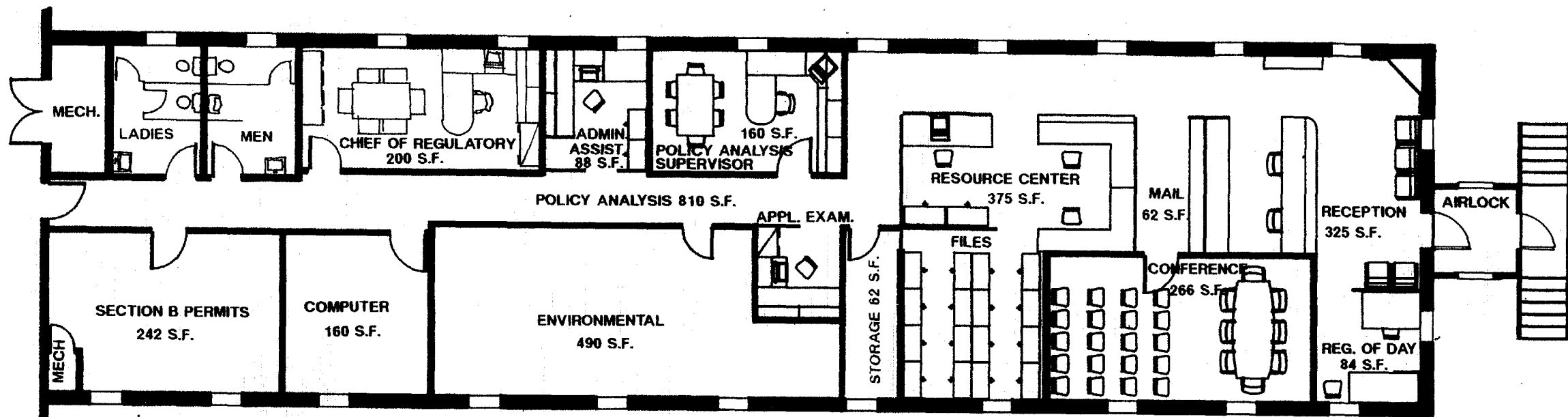
Receptacles

A safety hazard exists due to the ungrounded outlets. An electrician should test all circuits and de-energize the old, unsafe receptacles. As the old circuits are removed, new replacement circuits should be added. New outlets should be installed in the form of quad boxes with a load of 3 VA per outlet to service the personal computers. These boxes should be installed in the partition walls to eliminate a potential tipping hazard. In addition to the wall receptacles, floor receptacles may be used where desks are located away from the walls. The wiring can be installed in the crawl spaces that exist below the buildings.

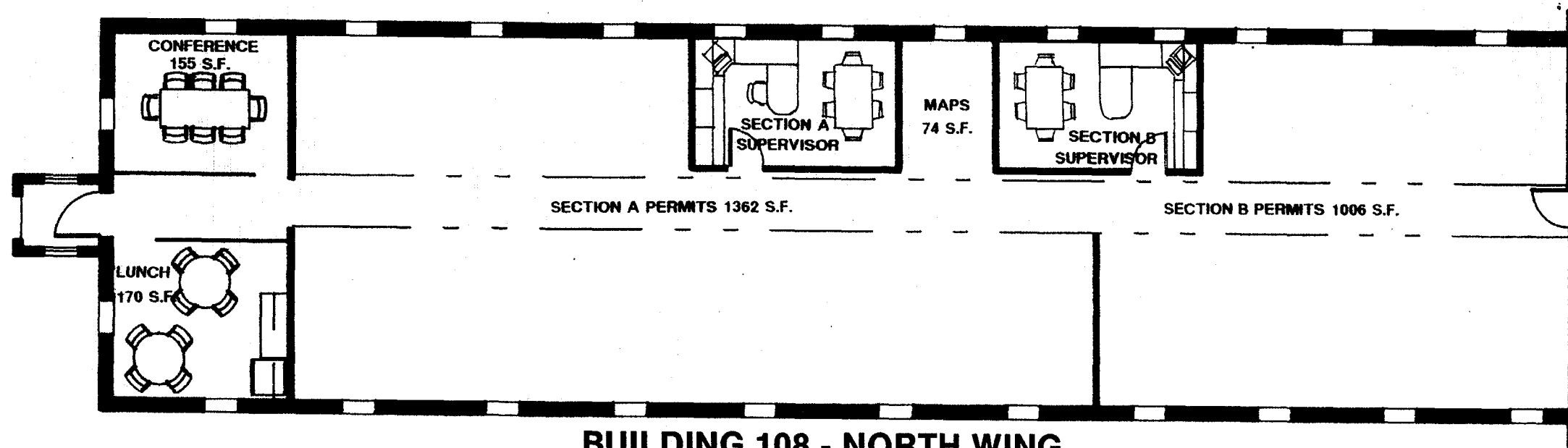
Lighting

Task lighting may be used at desks to compensate for poor light levels in existing rooms. Fluorescent lighting fixtures with electronic ballasts may be used in Building 108. In the reception, resource, conference, and lunchrooms, a lighting level of 50 foot candles should be installed. In a typical office, the energy savings from these fixtures should result in less than a five-year payback period. As existing lights are replaced with energy saving lights, the electricity saved may be used to power additional computers or other office equipment without increasing the overall electricity demand.

Also, provide new lighting in Building 108 South and in the Supervisors' Permits, and lunch/conference rooms.

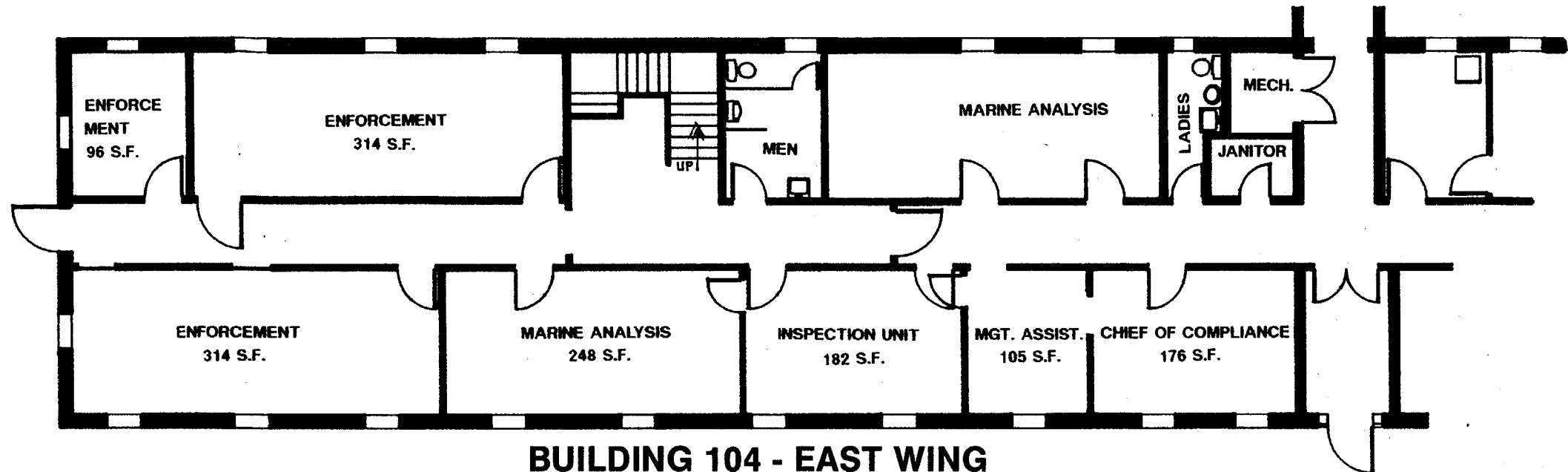


BUILDING 108 - SOUTH WING



BUILDING 108 - NORTH WING

SCHEME B



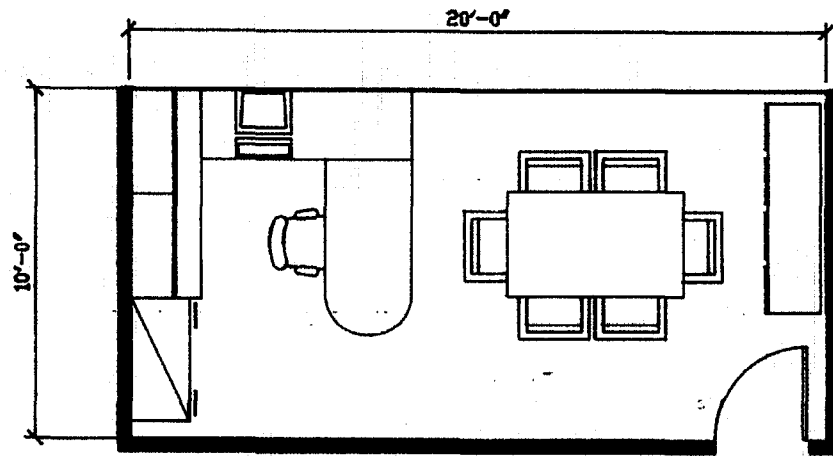
COST ESTIMATE SCHEME "B"

ENTRY VESTIBULE	\$ 13,665
DEMOLITION	10,500
BUILDING PARTITIONS	14,450
INTERIOR FINISHES	48,161
FURNITURE & EQUIPMENT	119,742
PLUMBING SYSTEMS	8,600
MECHANICAL & HVAC SYSTEMS	34,200
ELECTRICAL SYSTEMS	<u>26,800</u>
TOTAL	\$276,118

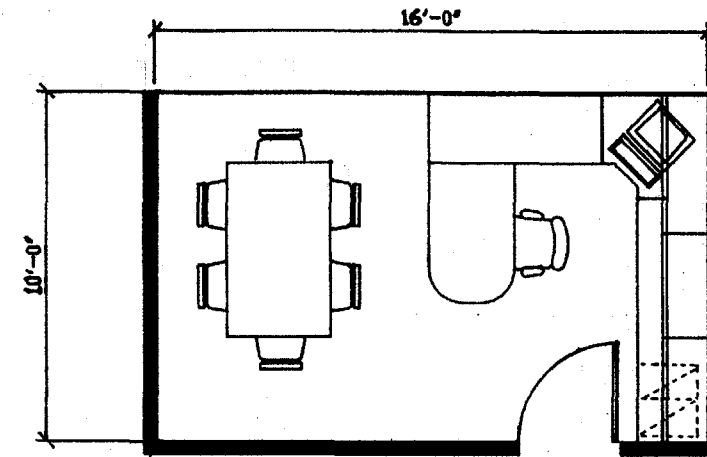
PROGRAM AREA SCHEME "B"

	EXISTING S.F.	PROPOSED S.F.	CHANGE
ADMINISTRATION	1525	1861	+336
POLICY ANALYSIS	530	810	+280
PERMITS-A	1351	1362	+ 11
PERMITS-B	1218	1248	+ 30
COMPLIANCE	<u>1543</u>	<u>1639</u>	<u>+ 96</u>
TOTALS	6167	6920	+753

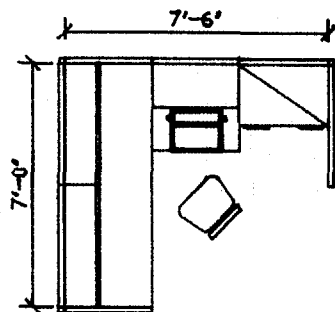
SCHEME B



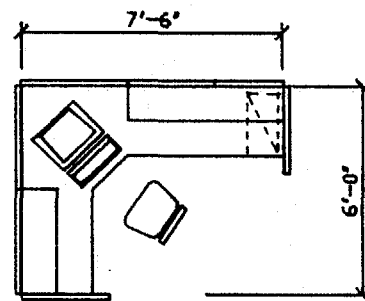
CHIEF OF REGULATION



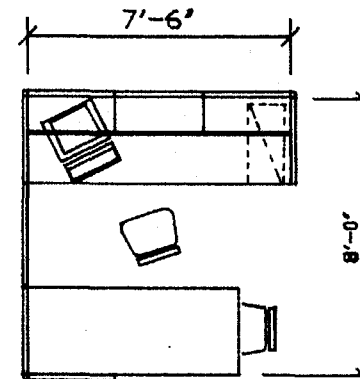
SUPERVISOR OFFICE



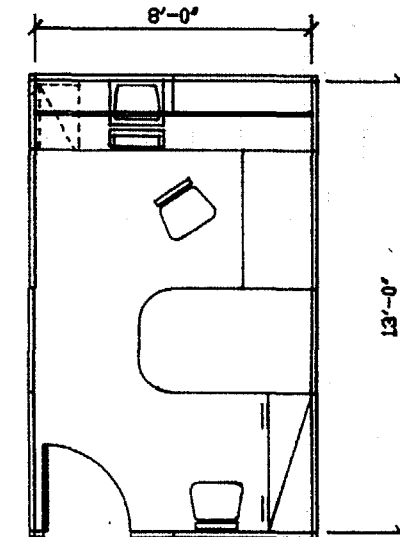
APPLICATION EXAMINER



TECHNICIAN



PROJECT MANAGER



**SENIOR
PROJECT MANAGER**

Typical Modular Office Prototypes

Scheme C

SCHEME C

GENERAL

Scheme C completely renovates both Buildings 108 and 104. This design concept is to maintain all functions that require closed, or partially closed rooms to be located along one wall; thus, leaving the remaining space to be subdivided into open plan offices.

SPECIFIC

In 108 South, a new reception area is created with a large conference room adjacent.

Administration and Policy Analysis sections are also located in this wing, so as to provide closed offices along the wall. This allows for the remaining office functions to be planned in a flexible office module system. New toilet rooms are renovated in this scheme.

108 North includes Permits (Sections A and B) together with the resource center. A small conference and lunchroom are located together reinforcing the

enclosed rooms along the wall. A number of Permits A and B work-stations are included in 108 South.

In Building 104, Compliance is also completely renovated. Because of fixed elements, such as the stairway, the concept of closed rooms along the exterior wall cannot be duplicated as in Building 108. Thus, some of the required closed rooms; i.e., chief of Compliance, files/storage, and toilet room are on either side of the central corridor. Staff open-planned work-stations enhance the communication in this area.

In both Buildings 108 and 104 all interior finishes, equipment, and furniture will be new and incorporate design standards identified in the Matrix on page 37.

In Scheme C there is capability to increase the staff capacity because of space efficient work-stations. This, coupled with a coordinated decor, will allow for the needed staff expansion and expedite workflow and communication.

MECHANICAL

Heating, Ventilation, and Air Conditioning

In Scheme C, the steam radiator and window mounted air conditioners are removed and a central HVAC system installed. Removal of wall radiators will allow an increase of floor space allowing modular office furniture to maximize office space. Heating will be provided by steam coils mounted on the discharge side of new fan coil units. Cooling is provided by refrigerated cooling coils that are mounted in-line with the heating coils. Remote air-cooled condensers are located outside the building and piped to the cooling coils.

The central HVAC system includes remote air-cooled condensers; fan coils and distribution ductwork with registers located in the ceiling. Fan coils could be installed in the attic space of Building 108 and in a ceiling soffit in Building 104.

This system would have an estimated installed cost of \$6/sq. ft., with a resultant first cost of approximately \$49,200. The energy efficiency ratio (EER) for central systems ranges between 8.0 and 9.0 btuh/watt and the annual energy cost is estimated at \$7,700 @ \$.10/kwh. Expected life of a central system is over ten years with proper maintenance. If the buildings were to be used for longer than ten years, the greater operating efficiency of the central system will result in a lower overall cost than the use of multiple window units.

Plumbing

New toilet rooms and fixtures will be installed in both buildings.

ELECTRICAL

Fire Alarms

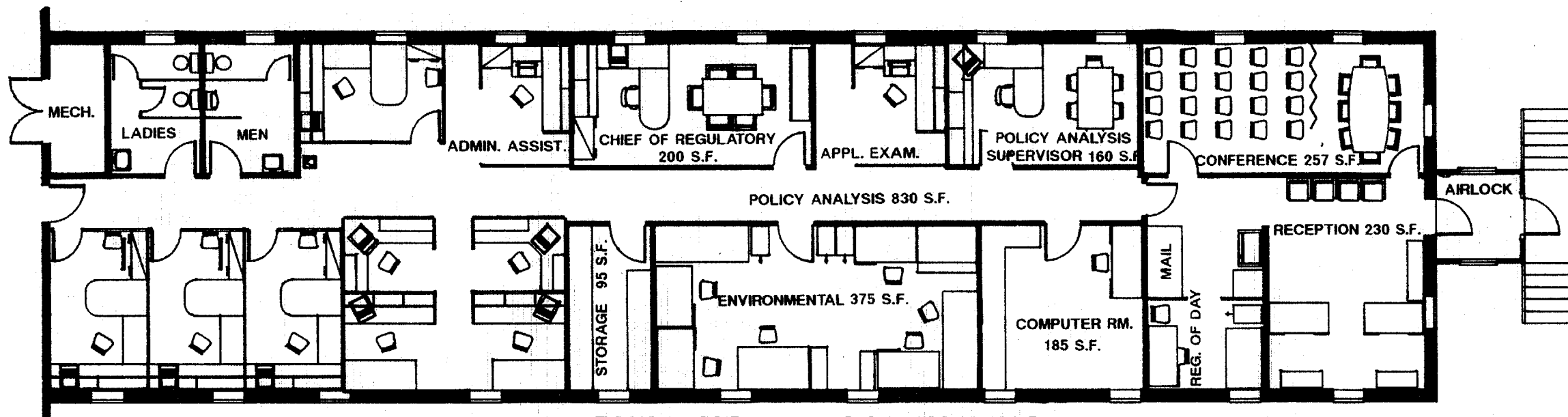
Existing heat detectors should not be reused. Smoke detectors should be installed and connected to a local alarm unit to provide fire detection. A manual pull station should be installed at each exit and, upon activation, signal the central coded alarm system.

Receptacles

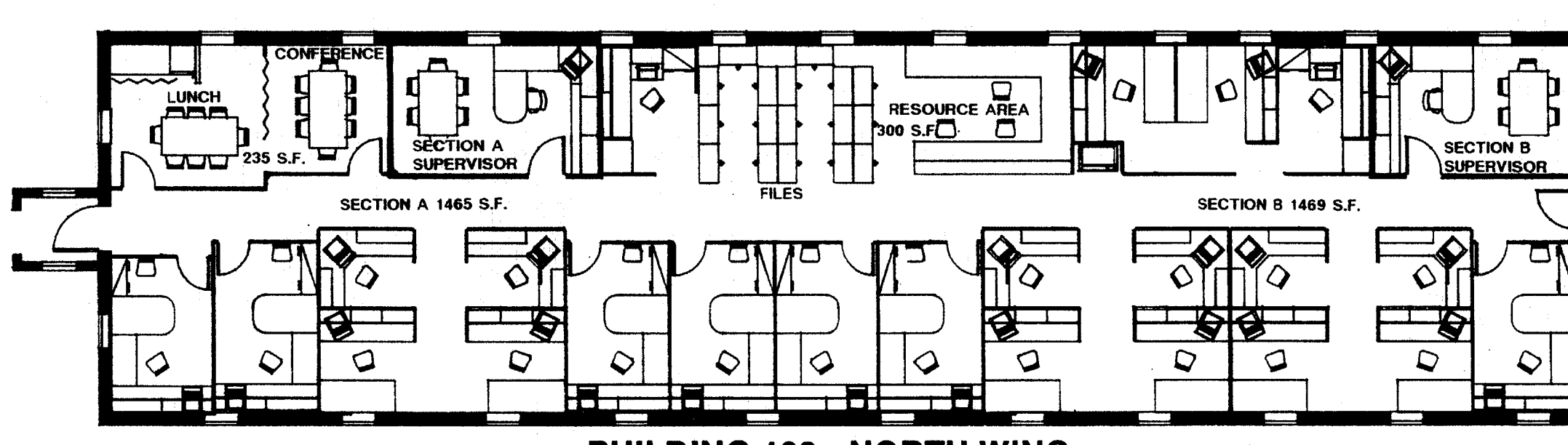
A safety hazard exists due to the ungrounded outlets. An electrician should test all circuits and de-energize the old, unsafe receptacles. As the old circuits are removed, new replacement circuits should be added. New outlets should be installed in the form of quad boxes with a load of 3 VA per outlet to service the personal computers. These boxes should be installed in the partition walls to eliminate a potential tripping hazard. In addition to the wall receptacles, partition strip outlets may be used where desks are located away from the walls. The wiring can be installed in the crawl spaces that exist below the buildings.

Lighting

Replace all ceiling fixtures with energy efficient fluorescent lighting. The large number of personal computers indicated that indirect lighting should be used to reduce glare on screens.

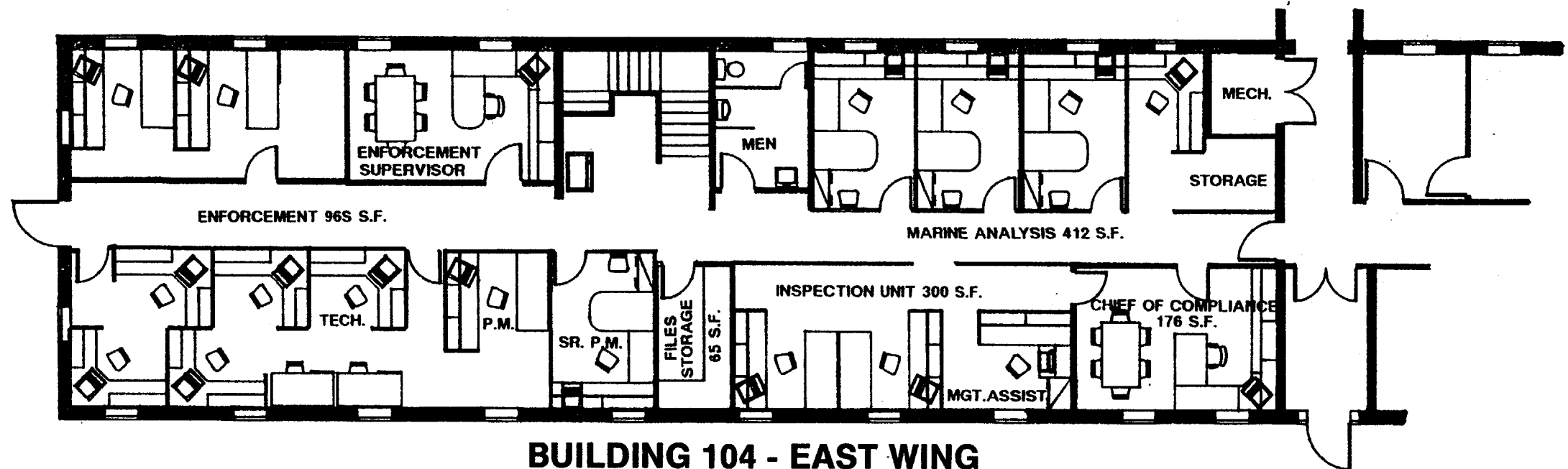


BUILDING 108 - SOUTH WING



BUILDING 108 - NORTH WING

SCHEME C



BUILDING 104 - EAST WING

COST ESTIMATE SCHEME "C"

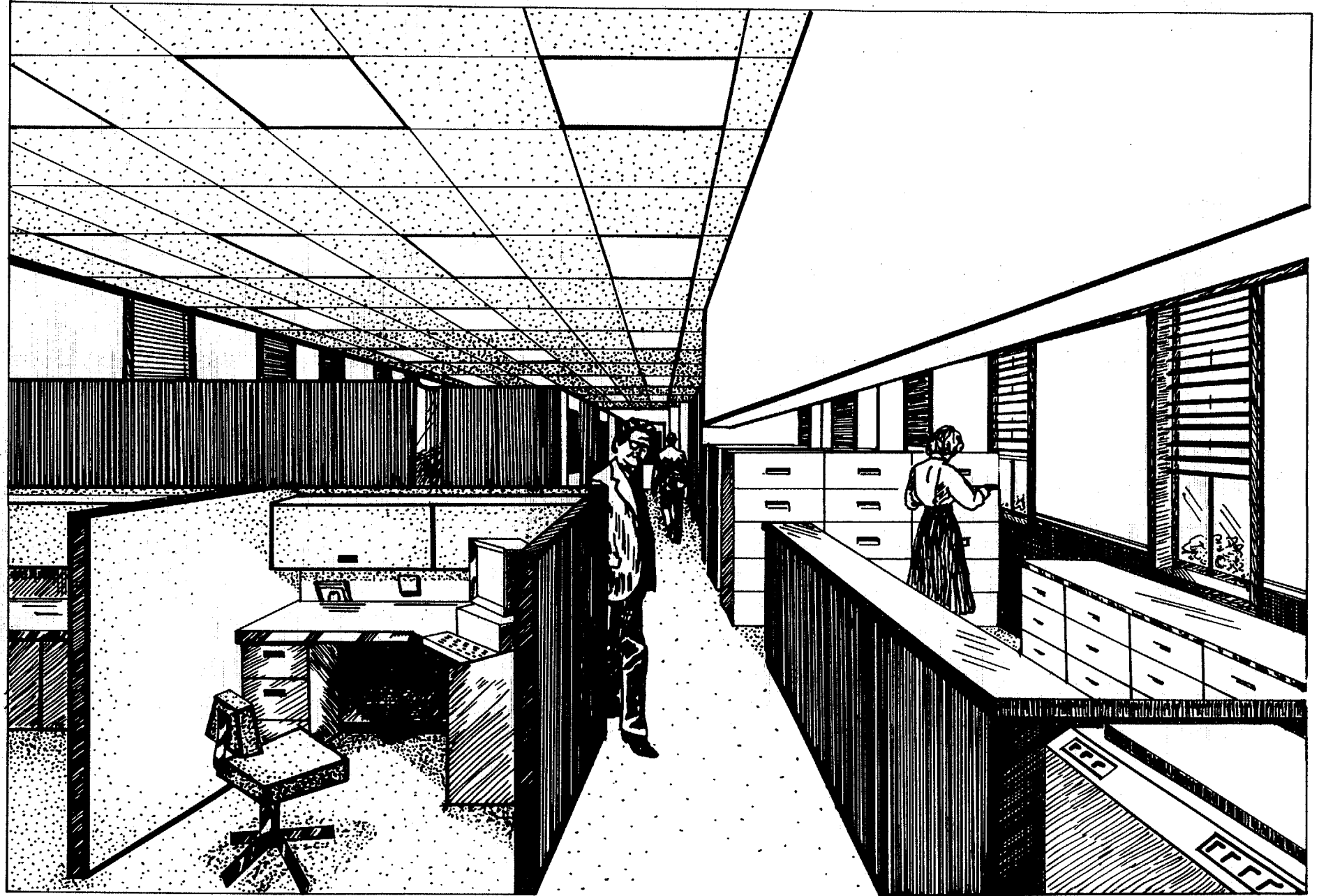
ENTRY VESTIBULE	\$ 13,665
DEMOLITION	24,500
BUILDING PARTITIONS	23,425
INTERIOR FINISHES	52,325
FURNITURE & EQUIPMENT	320,450
PLUMBING SYSTEMS	8,600
MECHANICAL & HVAC SYSTEMS	49,200
ELECTRICAL SYSTEMS	<u>76,400</u>
TOTAL	\$568,565

PROGRAM AREA SCHEME "C"

	EXISTING S.F.	PROPOSED S.F.	CHANGE
ADMINISTRATION	1525	1563	+ 38
POLICY ANALYSIS	530	867	+337
PERMITS-A	1351	1465	+114
PERMITS-B	1218	1469	+251
COMPLIANCE	<u>1543</u>	<u>1920</u>	<u>+378</u>
TOTALS	6167	7285	+1118

SCHEME C

Permits



*Similar interior view of
open plan Permits Section*

Scheme D

SCHEME D

GENERAL

Scheme D reinforces the design concept set forth previously in Scheme C in completely renovating both Buildings 108 and 104. This scheme houses Administration, Policy Analysis, the resource center, and reception all in 108 South. This allows 108 North to incorporate both Permits (Sections A and B).

This can be achieved by eliminating the traditional enclosed offices and maximizing modular work-stations. Section Supervisors' only would have enclosed offices.

SPECIFIC

The main entrance to 108 South will have a new reception, large conference, and resource center located at the main entrance. Administration and Policy Analysis will be arranged in the center; new toilet rooms and a combined conference/lunchroom will be at the end of 108 South.

In 108 North, Permits (Sections A and B) are located. Supervisor's of Sections A and B are located toward the center allowing staff to radiate around the supervisor's area. This is an open work-station design concept that allows maximum building width to be utilized.

In Building 104, Compliance, the use of the corridor and stairs for second floor access eliminates the opportunity to have a similar open work-station layout as in 108 North. This scheme combines individual work-stations within larger open rooms. In Scheme D new interior finishes, furniture, and equipment will be provided.

This scheme allows for expansion of staff and work stations and will enhance the office environment. It also allows Permits (Sections A and B) to be incorporated together.

MECHANICAL

Heating, Ventilation, and Air Conditioning

In Scheme D, the steam radiator and window mounted air conditioners are removed and a central HVAC system installed. Removal of wall radiators will allow an increase of floor space allowing modular office furniture to maximize office space. Heating will be provided by steam coils mounted on the discharge side of new fan coil units. Cooling is provided by refrigerated cooling coils that are mounted in-line with the heating coils. Remote air-cooled condensers are located outside the building and piped to the cooling coils.

The central HVAC system includes remote air-cooled condensers; fan coils and distribution ductwork with registers located in the ceiling. Fan coils could be installed in the attic space of Building 108 and in a ceiling soffit in Building 104.

This system would have an estimated installed cost of \$6/sq. ft., with a resultant first cost of approximately \$49,200. The energy efficiency ratio (EER) for central systems ranges between 8.0 and 9.0 btuh/watt and the annual energy cost is estimated at \$7,700 @ \$.10/kwh. Expected life of a central system is over ten years with proper maintenance. If the buildings were to be used for longer than ten years, the greater operating efficiency of the central system will result in a lower overall cost than the use of multiple window units.

Plumbing

New toilet rooms and fixtures will be installed in both buildings.

ELECTRICAL

Receptacles

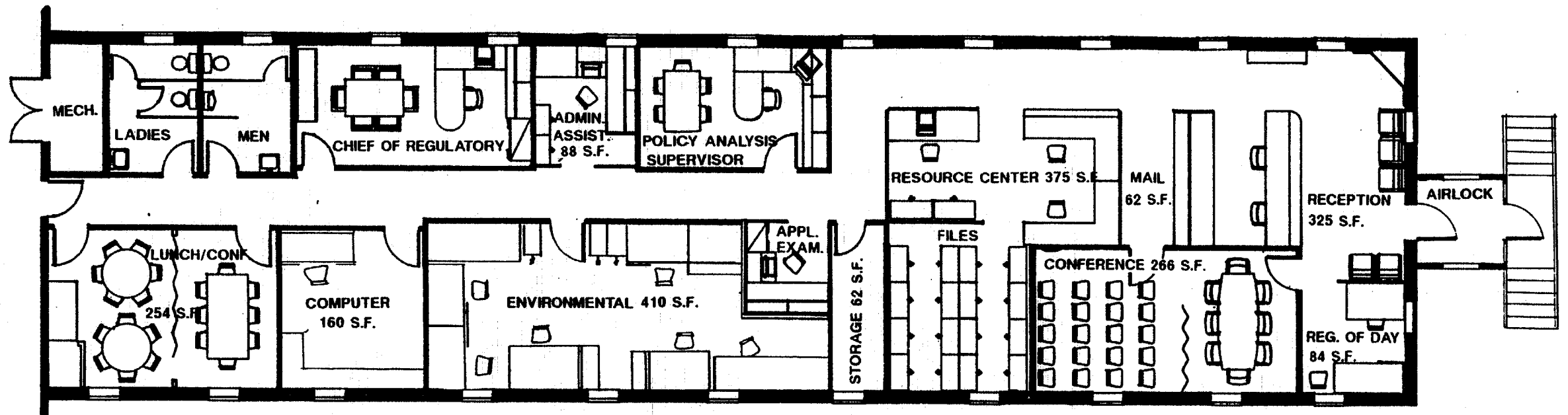
A safety hazard exists due to the ungrounded outlets. An electrician should test all circuits and de-energize the old, unsafe receptacles. As the old circuits are removed, new replacement circuits should be added. New outlets should be installed in the form of quad boxes with a load of 3 VA per outlet to service the personal computers. These boxes should be installed in the partition walls to eliminate a potential tripping hazard. In addition to wall receptacles, partition strip receptacles may be used where desks are located away from the walls. The wiring can be installed in crawl spaces that exist below the buildings.

Fire Alarms

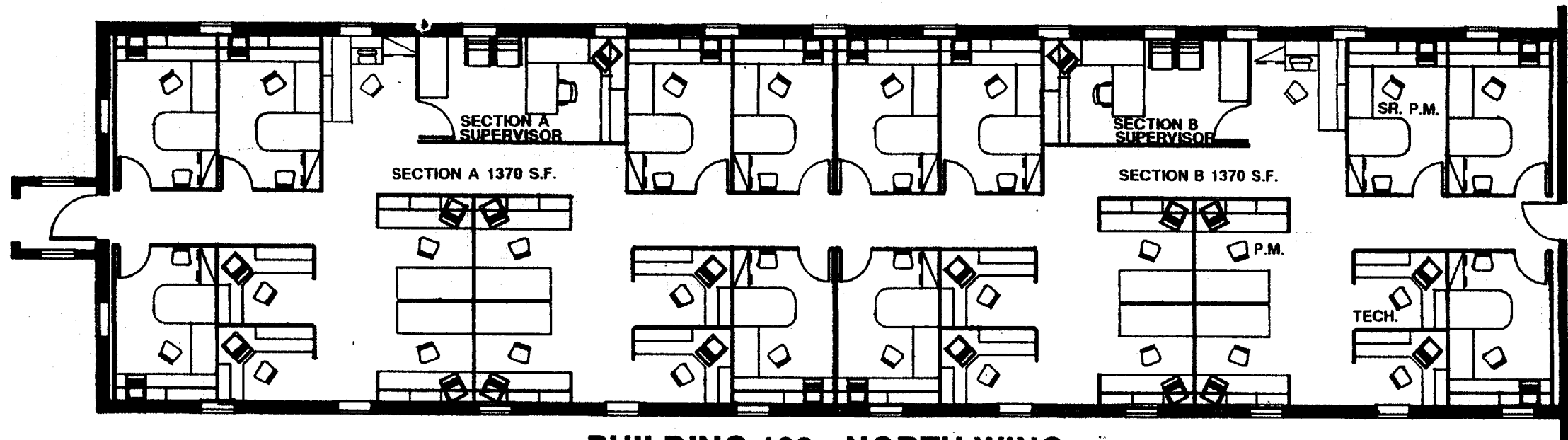
Existing heat detectors should not be reused. Smoke detectors should be installed and connected to a local alarm unit to provide fire detection. A manual pull station should be installed at each exit and, upon activation, signal the central coded alarm system.

Lighting

Replace all ceiling fixtures with energy efficient fluorescent lighting. The large number of personal computers indicated that indirect lighting should be used to reduce glare on screens.

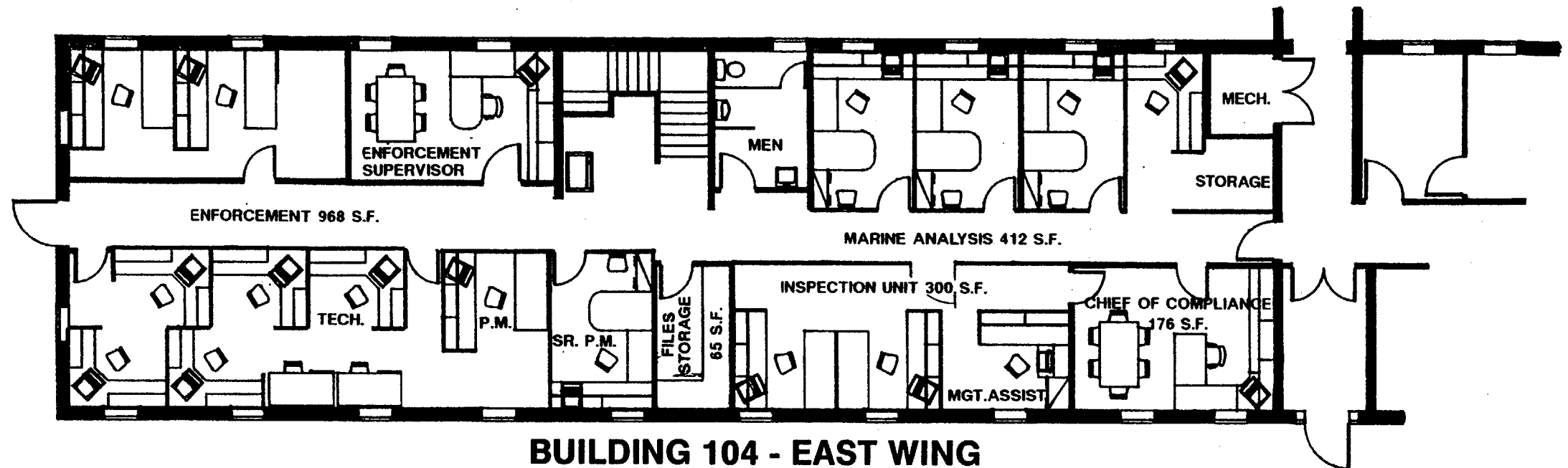


BUILDING 108 - SOUTH WING



BUILDING 108 - NORTH WING

SCHEME D



BUILDING 104 - EAST WING

COST ESTIMATE SCHEME "D"

ENTRY VESTIBULE	\$ 13,665
DEMOLITION	24,500
BUILDING PARTITIONS	20,177
INTERIOR FINISHES	52,325
FURNITURE & EQUIPMENT	320,450
PLUMBING SYSTEMS	8,600
MECHANICAL & HVAC SYSTEMS	49,200
ELECTRICAL SYSTEMS	<u>76,400</u>
TOTAL	\$565,317

PROGRAM AREA SCHEME "D"

	EXISTING S.F.	PROPOSED S.F.	CHANGE
ADMINISTRATION	1525	1696	+171
POLICY ANALYSIS	530	810	+280
PERMITS-A	1351	1370	+ 19
PERMITS-B	1218	1370	+152
COMPLIANCE	<u>1543</u>	<u>1920</u>	<u>+378</u>
TOTALS	6167	7167	+1000

SCHEME D

Conclusions

CONCLUSIONS

Noteworthy is that all drawings within this study are planning diagrams and are not to be interpreted as finished architectural plans.

GENERAL

This feasibility study evaluates the existing facilities of the Regulatory Branch with respect to program, efficiency, workflow, code requirements, and budget. The findings indicate that existing buildings should be renovated and that unless a complete renovation is accomplished there will be no benefit in adding critical work-stations for future staff.

By virtue of the requirements to provide for present and future staff increases, each of the four schemes presents certain constraints. The size and shape of each building limit flexibility. The reception and resource center was designed to successfully meet current and future needs in all four schemes. Individual design concepts can be so combined that there will be greater flexibility in each scheme.

Because of public involvement with Regulatory staff, more emphasis and space are required in the entrance area. Additional space required in the reception area eliminates capability to increasing area for staff. Also, the size, quality, and shape of existing furniture, (Schemes A and B) will decrease the area needed to maintain the current level of staffing. Thus, Schemes A and B will not meet the goals and objectives of the Regulatory Branch.

Only Schemes C and D will allow for additional work-stations and at the same time reorganize the functional relationships to provide an improved work environment. This can be achieved only by completely renovating the interior of the buildings and providing a flexible work-station for each staff function.

In Schemes C and D all interior finishes, furniture and equipment, will be new and incorporate

a good quality standard as set forth in Matrix A and B.

The resource center was designed to successfully meet current, and anticipate future needs. The location of the main entrance, with the allocated parking spaces, appears adequate based on limited space availability. A new entrance vestibule remains constant for each scheme.

This study shows no major problems with building nor safety codes. However, a formal code review of the final architectural documentation will be required in review with the General Services Administration.

The following matrixes represents graphically the major recommended improvements for each scheme:

Matrix Diagrams & Cost Estimate

MATRIX A

NOT
AFFECTED ○

PARTIAL ◐

FULL ●

	SCHEME			
	A	B	C	D
<u>ARCHITECTURAL</u>				
ASBESTOS INVESTIGATION	●	●	●	●
DEMOLITION	◐	◐	●	●
RECEPTION RENOVATION	●	●	●	●
RESOURCE CENTER RENOVATION	●	●	●	●
CONFERENCE/MEDIA ROOM (LARGE)	●	●	●	●
LUNCH/CONFERENCE ROOM	●	●	●	●
TOILET ROOM RENOVATION	○	●	●	●
SUSP. ACOUST. CEILING	◐	◐	●	●
FURNITURE & PARTITIONS	◐	◐	●	●
NEW FIXED WALLS	○	◐	●	●
EXTERIOR VESTIBULE	●	●	●	●
WINDOW TREATMENTS	◐	◐	●	●
PAINTING	●	●	●	●
FLOORING	◐	◐	●	●
<u>MECHANICAL</u>				
INSTALL D.A.P.R.V.	●	●	○	○
PLUMBING	○	●	●	●
INSTANT H ₂ O HEATERS	●	●	●	●
CENTRAL HVAC	○	○	●	●
<u>ELECTRICAL</u>				
REWIRE CIRCUITS	◐	●	●	●
LIGHTING	◐	◐	●	●
EMERGENCY LIGHTING	●	●	●	●
SMOKE DETECTORS & PULL STATIONS	●	●	●	●

	<i>Scheme A</i>	<i>Scheme B</i>	<i>Scheme C</i>	<i>Scheme D</i>
<i>Layout</i>	New reception conference, resource and lunch room only.	108 South totally renovated, 108 North partially renovated. 104 minor renovation.	Total renovation of buildings 108 and 104, fixed partitions on one side allowing an open plan for modular office furniture.	Total renovation of buildings 108 and 104. Alternate modular layout.
<i>Furniture and equipment</i>	All new desks, chairs, files, media equipment in newly renovated rooms.	All of Scheme A plus new supervisors offices.	Modular office furniture allowing smaller, efficient work stations.	Modular office furniture allowing smaller, efficient work stations.
<i>Design/Decoration</i>	Wall coverings, carpet, paint, window treatments, reception only.	Wall coverings, carpet, paint, window treatments.	All wall coverings, carpet, paint, window treatments, acoustical ceilings.	All wall coverings, carpet, paint, window treatments, acoustical ceilings.
<i>Expansion Capabilities</i>	Very minor, + 288 S.F. no increase in work staff.	Minor, + 753 S.F. in public reception area. No increase in work staff.	Allows increase + 1,118 S.F. Small increase in work staff.	Allows increase + 1,000 S.F. Small increase in work staff.
<i>Efficiency Work Flow</i>	Enhances public area and reception. Larger conference room.	Enhances public area and supervisors office are more efficient.	Organized, efficient departmental relationship.	Organized, efficient departmental relationship.
<i>Mechanical</i>	Minimum Heat Controls and new window A/C units.	Minimum Heat Controls and new window A/C units.	Central HVAC system installed.	Central HVAC system installed.
<i>Plumbing</i>	Add instant hot water to toilet rooms.	Hot water, new toilet rooms.	Hot water, new toilet rooms.	Hot water, new toilet rooms.
<i>Electrical</i>	Replace old circuits, add smoke detectors and emergency lighting throughout. New lights reception; conference, resource, etc..	Emergency lights, rewire circuits, smoke detectors. New lights in 108 South and supervisors offices.	Rewire circuits, new lighting, smoke detectors, and emergency lighting.	Rewire circuits, new lighting, smoke detectors, and emergency lighting.

OVERALL DESCRIPTION MATRIX B

	<i>Scheme A</i>	<i>Scheme B</i>	<i>Scheme C</i>	<i>Scheme D</i>
<i>Entry Vestibule</i>	\$ 13,665	\$ 13,665	\$ 13,665	\$ 13,665
<i>Demolition</i>	4,500	10,500	24,500	24,500
<i>Building Partitions</i>	-0-	15,564	23,425	20,177
<i>Interior Finishes</i>	34,454	48,161	52,325	52,325
<i>Furniture & Equipment</i>	26,600	96,632	320,450	320,450
<i>Plumbing Systems</i>	1,400	8,600	8,600	8,600
<i>Mechanical & HVAC Systems</i>	26,700	34,200	49,200	49,200
<i>Electrical Systems</i>	23,100	26,800	76,400	76,400
<i>TOTAL</i>	<i>\$130,419</i>	<i>\$276,118</i>	<i>\$568,565</i>	<i>\$565,317</i>

OVERALL COST COMPARISON MATRIX

SCHEME A

BUILDING 104

WINDOW TREATMENT\$ 2,519.00
PAINTING	2,136.00

BUILDING 108

DEMOLITION\$ 4,500.00
ENTRY VESTIBULE	13,665.00
FURNITURE/EQUIPMENT	21,000.00
WALL COVERINGS	1,516.00
WINDOW TREATMENTS	5,300.00
FLOORING	8,500.00
PAINTING	3,700.00
LUNCH/CONFERENCE ROOM	8,068.00
SUSPENDED CEILING	11,498.00
DIRECT ACTING PRESSURE RELIEF VALVES	5,100.00
REWIRE BLDG. CIRCUITS	11,000.00
EMERGENCY LIGHTINGS	1,484.00
LIGHTING	10,000.00
SMOKE DETECTORS/PULL STATIONS	6,000.00
WINDOW A/C UNITS	21,600.00
PLUMBING	1,400.00

TOTAL SCHEME A = \$138,986.00

SCHEME B

BUILDING 104

WINDOW TREATMENT\$ 2,519.00
PAINTING	2,136.00
FLOORING	4,251.00

BUILDING 108

DEMOLITION\$ 10,500.00
ENTRY VESTIBULE	13,665.00
FURNITURE/EQUIPMENT	96,632.00
WALL COVERINGS	7,535.00
WINDOW TREATMENTS	5,300.00
FLOORING	10,500.00
PAINTING	6,420.00
WALLS IN SOUTH WING	14,450.00
BATHROOMS	6,810.00
COMPUTER ROOM	9,500.00
LUNCH AREA	2,200.00
CONFERENCE ROOM	4,600.00
SUSPENDED CEILING	9,500.00
DIRECT ACTING PRESSURE RELIEF VALVES	5,100.00
REWIRE BLDG. CIRCUITS	13,500.00
EMERGENCY LIGHTING	2,100.00
LIGHTING	11,200.00
SMOKE DETECTORS/PULL STATIONS	7,500.00
BATHROOM PLUMBING	8,600.00
WINDOW A/C UNITS	21,600.00

TOTAL SCHEME B = \$276,118.00

COST ESTIMATE ALLOCATION

SCHEME C

BUILDING 104

BATHROOMS \$ 3,790.00

BUILDING 108

BATHROOMS \$ 7,882.00
ENTRY VESTIBULE 13,665.00

GENERAL FOR BUILDINGS 104 AND 108

WINDOW TREATMENTS \$ 10,863.00
PAINTING 8,949.00
FLOORING 15,273.00
WALL COVERINGS 8,017.00
2 X 4 PARTITIONS 23,669.00
NEW FURNITURE/EQUIPMENT 320,450.00
SUSPENDED CEILING 9,223.00
CENTRAL HVAC SYSTEM 49,200.00
PLUMBING 8,600.00
REWIRE CIRCUITS 24,025.00
EMERGENCY LIGHTING 7,362.00
LIGHTING 22,202.00
SMOKE DETECTORS/PULL STATIONS 11,139.00
DEMOLITION 25,000.00

TOTAL SCHEME C = \$569,309.00

SCHEME D

BUILDING 104

BATHROOMS \$ 3,790.00

BUILDING 108

BATHROOMS \$ 7,882.00
ENTRY VESTIBULE 13,665.00

GENERAL FOR BUILDINGS 104 AND 108

WINDOW TREATMENTS \$ 10,863.00
PAINTING 8,949.00
FLOORING 15,273.00
WALL COVERINGS 8,017.00
2 X 4 PARTITIONS 21,821.00
NEW FURNITURE/PARTITIONS 320,450.00
SUSPENDED CEILING 9,223.00
CENTRAL HVAC SYSTEM 49,200.00
PLUMBING 8,600.00
REWIRE CIRCUITS 24,025.00
EMERGENCY LIGHTING 7,362.00
LIGHTING 22,202.00
SMOKE DETECTORS/PULL STATIONS 11,139.00
DEMOLITION 25,000.00

TOTAL SCHEME D = \$567,461.00

COST ESTIMATE ALLOCATION